arouse interest in science amongst the general public. How this is to be done is not an easy problem. One thing that might certainly be done is to adopt the suggestion of the *Electrician*, and arrange that the latest discoveries in science should be described in simple language. It seems to me that this should be done by several individual workers rather than by one lecturer alone, even in the case of a subject of comparatively narrow field. It is not always possible to know where a hearer may find difficulty of apprehension, and different ways of putting things aid in clearness of grasp. In fact, something more in the nature of a public discussion might be more stimulating and instructive. I am somewhat ignorant as to how far the popular lectures as at present given can be considered to be successful. Personally, I find a set lecture of a length approaching an hour somewhat tiresome; but opinions differ as to this. The presentation of a new discovery by more than one person might tend to overcome the difficulty referred to in the article in *NATURE*, namely, the fact that genius for discovery is not always associated with facility of popular exposition or with an attractive manner of bringing out its importance. At the same time it should not be forgotten that there is a natural interest in hearing an account of a new discovery from the lips of the man who made it, even though he may not be able to make it as clear as may another speaker whose gifts are of a different kind. Men of science themselves are not devoid of this interest or curiosity. If the practice of formal lectures is followed, I feel sure, from remarks that I have heard, that the method adopted at the Royal Institution is the best—I mean the absence of any introduction or votes of thanks. At the end of an hour's lecture the audience is more or less fatigued and apt to be impatient of the kind of remarks usually made.

If the Association were known to be made up of members from all kinds of callings and positions in life, its pronouncements on such national problems as the teaching of science in schools, the relation of science to the public services, and so on, would have a greater influence. It has already done good work in this way, and could do more.

There is another way in which I venture to think the Association might be useful. Sensational, exaggerated, and inaccurate statements with regard to supposed new discoveries appear from time to time in the daily Press. Those unfamiliar with the facts find it difficult or impossible to learn the truth about them, and when the statements are found at a later date to have no basis scientific credit is likely to suffer. Such assertions as the overthrow of Newton, and even of the foundations of science, by Einstein's work, and the wild statements about the transplantation of glands of internal secretion and about Besredka's work on immunity, require authoritative correction. Possibly committees of a more or less permanent character might meet throughout the year, but it is not easy to see how it could best be done.

The mention of committees suggests an appreciative reference to the Special Reports issued from time to time by the Association. These are frequently of great value as showing the wide bearing of facts in one branch of science upon other branches. The reports on "Colloid Chemistry" may illustrate my meaning. These various reports are by no means so widely known as they should be, and this part of the activity of the Association might well be continued.

I feel some doubt as to whether the research committees repay their cost, and whether their work would not be better transferred to the Department of Scientific and Industrial Research or to the Medical Research Council, as the case may be.

This letter contains little, it is to be feared, in the

way of suggestion for constructive advance, but I should like to add my testimony in support of the position taken up in the article in *NATURE*.

W. M. BAYLISS.

University College, London, September 21.

THE leading article in *NATURE* of September 16 brings out very clearly what many of us feel to be an increasing difficulty at the meetings, not only of the British Association, but also of most other scientific societies. In fact, it is scarcely an exaggeration to say that members sit through the bulk of meetings and listen to the majority of papers out of mere courtesy. Only in rare instances, when the paper read happens to touch the listener's special line of work, can one take an intelligent interest in the proceedings. Even then it is wise to wait until a paper is in print before forming an opinion. Some good-natured person, however, often sacrifices himself and offers a few trite, and usually irrelevant, remarks which pass muster for a discussion. Under these conditions one is tempted to ask oneself what real good is achieved by such meetings and in what way they can help the progress of research. I admit this state of things is far worse in some subjects than in others; in mathematics it exists in an aggravated form. On the other hand, I have rarely attended a meeting of the Royal Astronomical Society without being stimulated and interested. But this defect is found, in varying degrees, at every scientific meeting, and it grows steadily worse as years go by.

Much of the trouble seems to be due to the increasing subdivision of the departments of science and the tendency of each subdivision to create a nomenclature of its own, so that science is being rapidly threatened with the curse which fell upon the builders of the Tower of Babel. Often a mere name, which if explained in terms known to all scientific workers would be at once mastered, proves a decisive stumbling-block. Thus it is not infrequent to hear the engineer complain of the general unintelligibility of the ordinary mathematician or physicist, but he seems entirely unaware that he himself uses what seems to the others an equally unintelligible jargon.

Another contributory cause, to which your leading article alludes, is that the rapid growth of many border-line sciences is now overshadowing the old recognised domains. In much of the new physical chemistry, for instance, both the physicist and the chemist brought up on classical lines feel themselves equally at sea. The thing has grown up unnoticed, as it were; they have had a glimpse here and a glimpse there, but they have no clear understanding of the new foundations or of how their own work is affected by the new developments. Many would like to obtain this understanding, but find that in order to do so they must first read up hundreds of scattered original papers containing 90 per cent. of matter of no interest to them, and they may have neither the time nor the inclination for the task. The fact is that research in such border-line sciences has outstripped the textbook writer; and although text-books are often bad, they nevertheless have a useful, even an essential, function to fulfil.

If such are the difficulties confronting the trained scientific worker, what are we to say of the intelligent amateur in a provincial town, such as the British Association regularly visits? To him, indeed, much must be Greek, even of the presidential addresses; and the papers, many of quite special and trivial interest, which make up the bulk of the business of the sections, can make no appeal whatever. Indeed, the only surprising thing to me is that any such persons attend the meetings at all; it speaks volumes for their keenness and devotion that some do.

But if the British Association is really to take for one of its tasks the bringing of science home, so to speak, to the British public, if it is to give its energies to what the French call "vulgarisation," and if in addition it is to promote co-operation and understanding between workers in different branches, then it must modify not only the procedure at its meetings, but also the character of its printed reports. These are often scrappy and confusing in the extreme. More attention ought to be paid to systematic expositions of recent scientific developments set forth in such a manner that they can be read and understood by everyone with a fair all-round scientific education, and supplemented by exhaustive references for those who wish to go into the subject. Such "Reports on the State of Science" will not be a new departure in the history of the Association. A good recent example of a difficult mathematical subject so treated is to be found in H. Bateman's report "On the History and Present State of the Theory of Integral Equations," printed in the 1910 Report. On the other hand, much of the material now published under the heading "Reports on the State of Science" seems to me far too special, and could with advantage be published elsewhere.

As to the meetings, I agree entirely with the view expressed in the leading article that the function of a section "should not be technical discussion by specialists for specialists, but the enlightenment of an extensive group of workers as to main lines of advances in fields not specifically their own." To obtain this result what is needed is not a succession of papers by individual specialists, but rather one or two stimulating addresses by a carefully selected lecturer who can be trusted to avoid the faults referred to in your article.

At the same time I suggest there should also be social and entirely informal meetings for semi-private discussion. These should be for real, effective comparing of notes by workers on the same lines, each set chatting round its own table; a member, during the course of one meeting, might talk and listen at several tables in succession.

About organisation, the arbitrary division of science into watertight sections is inevitably bound to lead to trouble as subjects grow. (Incidentally, there is much to be said against the present classification.) The main trouble, however, is that with the sections as at present it is nobody's business to arrange joint meetings to deal with border-line subjects. A possible solution would be to have standing joint committees of groups of sections, the sole duty of which should be that of co-ordination. If need be, the same section could appear in more than one group; thus chemistry might take its place both in a physical and in a physiological group.

L. N. G. FILON.

University of London, University College,
September 21.

THE problem of the best use that we can make of the annual meetings of the British Association is one that presents many difficulties. There is so much to be accomplished and so little time available—less than ever since 1914, though in this respect I understand the former conditions are to be restored next year.

At present the most important functions of the Association are to stimulate and maintain the interest and activities of local workers, and to enable men of science who are engaged on problems which require the co-operation of a number of observers scattered about the country to obtain new recruits. At the same time the meetings give them the opportunity of addressing a wider audience than that afforded by the scientific societies—an audience which includes a large number of university workers who are resident in the provinces

during the university terms and a certain proportion of the men and women, all too few in number, who take an intelligent interest in science, though they have not adopted it as a career.

But, as you have indicated, the Association has almost wholly failed to appeal to the man of at least ordinary intelligence and education who has never seriously considered the purpose and achievements of science. This is, I believe, largely the fault of the methods of our schools. If science has been taught at all, the aim has been to drill the pupil in the use of correct technical language and in the exact mathematical expression of natural laws, instead of to implant a living interest in the subject—a far more important matter in the early stages of mental development.

However that may be, the task with which we are now faced is to attract to the meetings those who are at present quite apathetic about all that concerns the progress of science. We already have a few popular lectures on Royal Institution lines, and no doubt it would be desirable to increase their number; but they should be comparatively brief—forty minutes at most—and arrangements should always be made for the discussion of debatable points by competent speakers. Nothing is so calculated to increase the interest and facilitate the understanding of a subject as its presentation from different aspects. Perhaps the greatest successes of recent meetings have been the inter-sectional discussions, which have on one hand aroused popular interest, and on the other done much to develop co-operation between different branches of science.

I am not in agreement with the idea that a meeting of the British Association should not be made an occasion for the announcement of new discoveries or for the description of new developments in research. Provided they are not of too abstruse a character, they are of great value in increasing the prestige of the Association among its members.

If, however, we wish to attract larger audiences of the general public and secure a wider membership, we must do more to advertise the meetings. Something in the nature of a *catalogue raisonné* of the more interesting features should be circulated some weeks beforehand, especially in the neighbourhood to be visited. Short illustrated articles should be contributed to the local papers indicating the topics that are to be considered and the problems that present themselves for solution—sufficient to whet, but not to satiate, the curiosity of the man in the street, so that he may understand that he will not be compelled to listen to dissertations on abstract subjects in unintelligible phraseology, but will have the opportunity of hearing important and interesting questions discussed in a simple, straightforward fashion that any intelligent man will be able to follow.

JOHN W. EVANS.

Imperial College, September 22.

I HAVE been greatly interested in the leading article in NATURE of September 16 on the position of the British Association. Anyone is interested in an expression of his own views in better language than he can himself command.

While it is the function of the several scientific societies to do their utmost for the advancement of science, each within its own narrow limits, the Royal Society affording common ground for discussion for the *élite* only, the British Association has primarily a double duty to the nation and to the world. On one hand, it should encourage the "cross-fertilisation of the sciences," as no other body can, by bringing together the members of its various Sections so that each may help the others. This co-operation is valuable,